



EVERYTHING UNDER THE SUN

ENERGY EDUCATION
RESOURCES FOR
NORTH DAKOTA
TEACHERS

2003



FREE

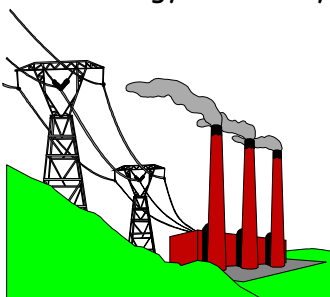
ENERGY EFFICIENCY & RENEWABLE ENERGY TEACHING RESOURCES

The North Dakota State Energy Program offers state educators several free energy efficiency and renewable energy teaching resources.

Covering almost every energy efficiency and renewable energy topic, NDSEP educational resources range from new K-6 energy curriculums, to publications and videotapes.

NDSEP energy efficiency and renewable energy educational resources may be applied in several subject areas to supplement textbooks, and classroom activities, and could add an interesting element in any number of learning opportunities.

NDSEP energy efficiency and renewable energy educational resources include:



Energy Source Curriculum Kits
Energy Ant Coloring Books
Publications
Software
Posters
Videos



There are also several energy education web sites on the Internet. One site with much energy education information is the Department of Energy at eren.doe.gov. Go to Specialized Resources on the Home Page, and click on Education. You will find at least a dozen sites you may wish to consider for use.

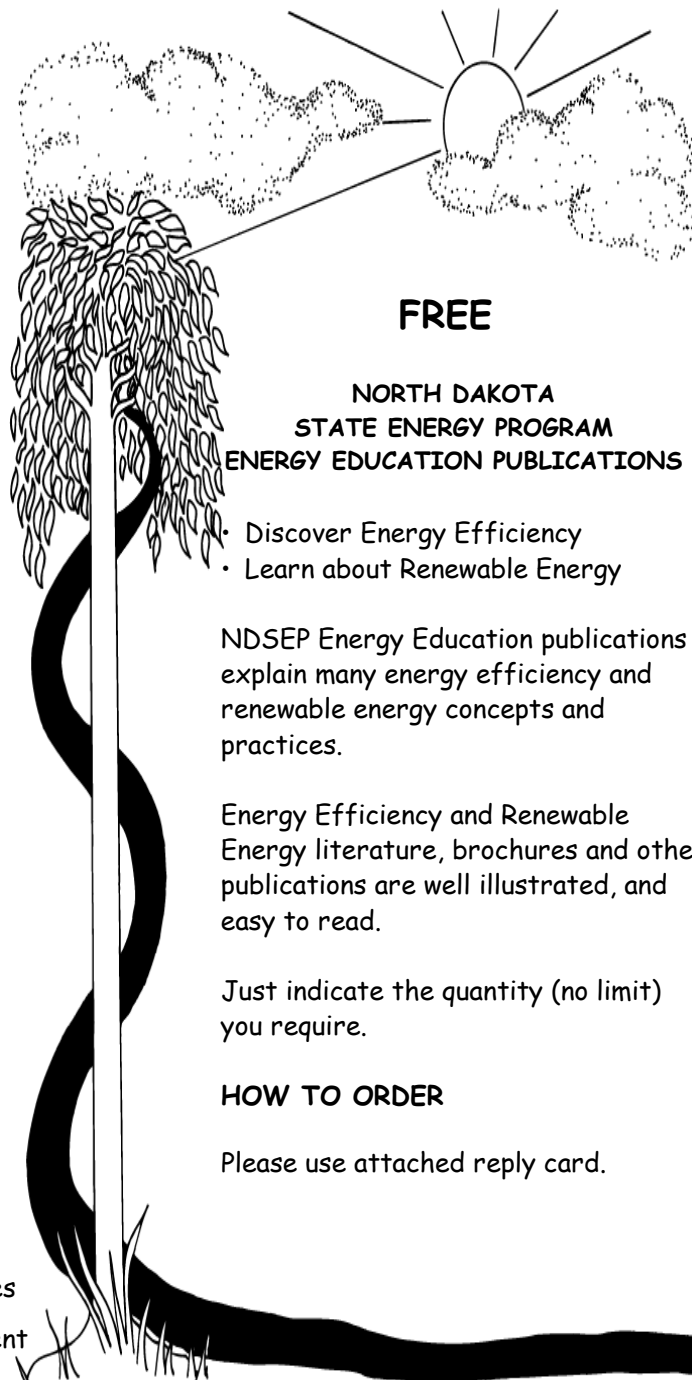
Do not hesitate to email, call, fax or write if you feel the NDSEP can help with additional energy education assistance.

NORTH DAKOTA DEPARTMENT OF COMMERCE
DIVISION OF COMMUNITY SERVICES
STATE ENERGY PROGRAM
400 EAST BROADWAY AVENUE, SUITE 50
PO BOX 2057
BISMARCK, ND 58502-2057
328-5300 Phone — 328-5320 Fax
www.state.nd.us/dcs



PUBLICATIONS

1. House of Straw
2. Sunspace Basics
3. The Earth's Energy
4. Solar Water Heating
5. Insulation Fact Sheet
6. Solar Heating and You
7. Tips for Energy Savers
8. Earth Sheltered Houses
9. Energy Efficient Lighting
10. Energy Efficient Windows
11. Geothermal Heat Pumps
12. Cooling Your Home Naturally
13. Solar Collectors You Can Build
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30. Electricity When and Where You Need It: From the Sun
31. Learning About Renewable Energy (For Young Scholars)



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**NORTH DAKOTA
STATE ENERGY PROGRAM
ENERGY EDUCATION PUBLICATIONS**

- Discover Energy Efficiency
- Learn about Renewable Energy

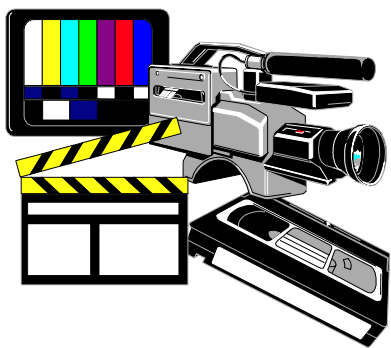
NDSEP Energy Education publications explain many energy efficiency and renewable energy concepts and practices.

Energy Efficiency and Renewable Energy literature, brochures and other publications are well illustrated, and easy to read.

Just indicate the quantity (no limit) you require.

HOW TO ORDER

Please use attached reply card.



Watch and Discover Energy Efficiency & Renewable Energy Concepts and Applications

FREE

Energy Efficiency and Renewable Energy videos are creative, and explain energy concepts in clever, interesting ways. Order a tape for your class. You only have to pay return postage.

HOW TO ORDER

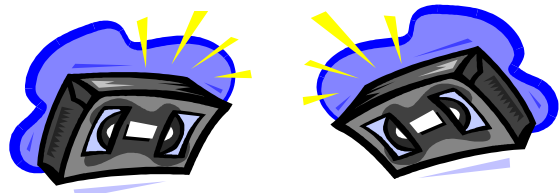
Please use Reply Card.

TWENTY-SEVEN ENERGY EDUCATION VIDEO CHOICES

1. ***Go***
(10 minutes - Grades K-3 - video)
An introductory film on how we rely on energy to make things go.
2. ***Toast***
(12 minutes - Grades 3-12 - video)
Describes the use of fossil fuel energy.
3. ***Element One***
(60 minutes - Grades 9-12 - video)
Introduces viewer to major advancement in hydrogen use as a non-polluting inexhaustible renewable energy source.
4. ***Energy Supply***
(34 minutes - Grades 7-12 - video)
Updates problems posed by continued reliance on conventional energy sources and proposes possible solutions.
5. ***Small is Beautiful: Impressions of Fritz Shumacher***
(30 minutes - Grades 9-12 - video)
Highlights the viewpoints of decentralization, small scale technology, and local economies.
6. ***Energy Efficiency***
(22 minutes - Grades 7-12 - video)
Examines the importance of energy efficiency improvements in meeting our energy needs.
7. ***The Solar Frontier***
(25 minutes - Grades 5-12 - video)
Three Canadian houses illustrate active, passive and hybrid solar design.
8. ***The Solar Promise***
(28 minutes - Grades 5-12 - video)
Introduction to solar design. Stresses value and cost-effectiveness of passive solar.
9. ***Geothermal Energy***
(16 minutes - Grades 2-5 - video)
A down-to-earth animated adventure featuring G. Arthur Mole who explains the processes and benefits of this renewable energy resource.
10. ***Race For The Future***
(21 minutes - Grades 5-12 - video)
The past, present and future of solar and electric cars.

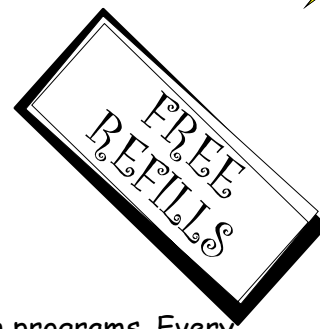


11. ***The Power of Wind***
(16 minutes - Grades 6-12 - video)
Describes wind energy history and features potential for worldwide development.
12. ***What Energy Means***
(15 minutes - Grades 4-6 - video)
Introduces basics of energy – from chemical energy to light energy and how they may be converted from one form to another.
13. ***Lovins on the Soft Path: An Energy Future With A Future***
(36 minutes - Grades 9-12 - video)
Presents an analysis of the energy problem and the importance of energy efficiency and renewable energy resources.
14. ***Residential Wind Power***
(60 minutes - Grades 9-12 - video)
Answers wind turbine purchase and installation questions.
15. ***Kilowatts From Cowpies: The Methane Option*** (25 minutes - Grades 7-12 - video)
Discusses the production of methane from animal wastes and the uses of methane on the farm.
16. ***Wind: Energy For The 90s***
(24 minutes - Grades 9 - 12 - video)
Explores potential for increased use of wind energy and explains how wind turbines work.
17. ***Residential Solar Energy***
(50 minutes - Grades 9-12 - video)
Responds to frequently asked photovoltaic solar electric system questions.
18. ***The Man who Loved Machines***
(9 minutes - Grades 4-12 - video)
Illustrates the importance of matching the energy source with the task at hand to minimize energy loss.
19. ***The Attached Solar Greenhouse***
(28 minutes - Grades 5-12 - video)
Explains principles of greenhouse construction. Visits greenhouses ranging from low cost owner-built to custom-designed solariums.
20. ***Recycling: It's Everybody's Job***
(20 minutes - Grades K-6 - video)
Students get down and dirty when they sort through family garbage for a class project.
21. ***How to Build a Straw Bale House***
(90 minutes - Grades 9-12 - video)
"How To" tape covers straw bale construction specifics.
22. ***Opening Your Home to Solar Energy***
(28 minutes - Grades 7-12 - video)
Explains methods for utilizing low cost, passive solar techniques in existing houses.
23. ***Simple Things You Can Do To Save Energy: The Power Is In Your Hands***
(15 minutes - Grades 3-6 - video)
Follows adventures of Sarah as she tours an unusual house which teaches lessons about energy use and conservation.
24. ***Simple Things You Can Do To Save Energy In Your School***
(15 minutes - Grades 4-8 - video)
Shows kids no-cost and low-cost ways to help their school stay energy smart.
25. ***Wind Energy at Spirit Lake Elementary School***
(20 minutes - Grades 7-12 - video)
See how students at Spirit Lake School feel about with their wind turbine.





ENERGY EFFICIENCY EDUCATION PROGRAMS



Energy Source curriculum kits are comprehensive energy education programs. Every curriculum kit contains all the materials needed for instruction. There is nothing to purchase or reproduce, and a minimum of preparation time is required.

HOW TO ORDER

To order Energy Source energy education programs just complete and mail reply card.

OFFALOT

KINDERGARTEN

THEME

"Offalot", a furry, animal-like hand puppet, turns things "off a lot" — things like TVs or lights that are not being used. *Offalot* helps teachers introduce energy-related activities.

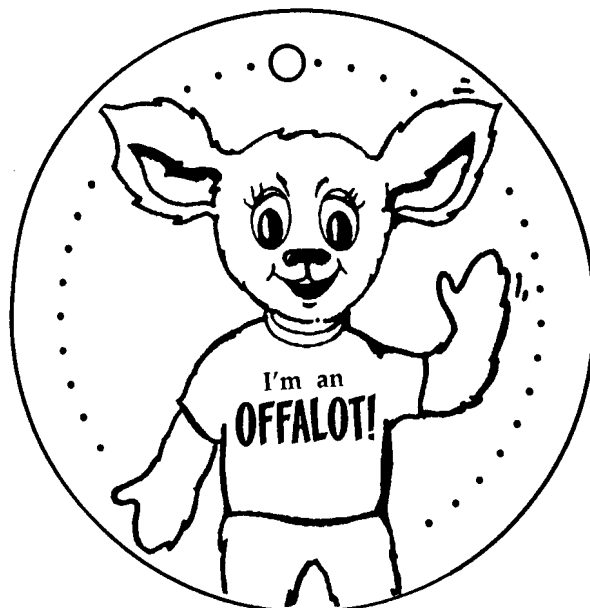
LEARNING OBJECTIVES

- Identify home energy users.
- Learn how using energy costs money.
- Introduce proper energy conservation and safety practices.

LEARNING MATERIALS INCLUDE:

- Teacher guide
- *Offalot* hand puppet
- Activity felt sheet

- Class poster, "Save Energy! Be Safe with Energy!"
- Practice Exercise
- Energy Safety
- Energy Conservation
- Home Activity Worksheet
- Class Record Sheet





ENERGY ELVES

FIRST OR SECOND GRADE

LESSON

With a colorful storybook and interactive activities, students learn practical science concepts about energy - where it comes from, how we use it and why it is important to use it efficiently.

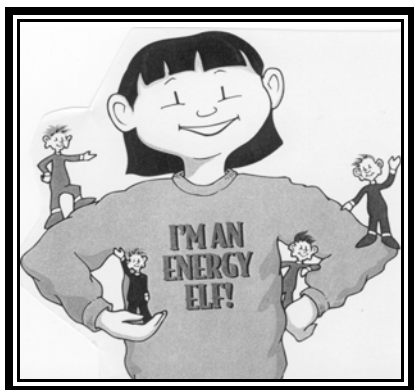
LEARNING OBJECTIVES:

Students are actively involved with stories, role-playing practice exercises and other activities throughout Energy Elves to help them learn:

- How energy is produced
- How energy is used
- How energy arrives at our homes
- Why it is important to use energy efficiently

LEARNING MATERIALS INCLUDE:

- Teacher guide
- Storybook with three entertaining stories
- Energy user picture cards
- Class poster, "How Energy Gets to Us"
- Practice Exercises



ENERGY EXPLORERS

THIRD OR FOURTH GRADE

LESSON

The energy we use comes from many sources. Each of these sources has cost, supply and environmental advantages and disadvantages.

LEARNING OBJECTIVES

Students will identify a specific energy source after they receive particular facts. They will learn how to:

- Describe how electricity is generated from various energy sources
- Identify energy safety rules for the use of electricity, gasoline and natural or propane gas
- Assess personal energy use habits

LEARNING MATERIALS INCLUDE:

- Teacher guide
- Class poster, "How We Get and Use Energy"
- Student handouts
- Student practice exercises
- Home activity sheet



PEOPLE POWER

FIFTH OR SIXTH GRADE

LESSON

PEOPLE POWER combines energy efficiency classroom study with a personal energy survey.

LEARNING OBJECTIVES:

Through several activities, demonstrations and People Power problems, students learn:

- How we use energy to make electricity, drive vehicles, manufacture products and heat buildings.

- Why it is important to use energy wisely, to protect the environment, make our energy supply last longer and save money.
- How individuals and families can save energy.
- What government and industry are doing to help save energy.

LEARNING MATERIALS INCLUDE:

- Teacher guide
- Class poster, "PEOPLE POWER"
- Student Booklets
- Home Energy Surveys
- Pretests and posttests
- People Power Stickers



North Dakota Division of Community Services
offers energy efficiency and renewable energy educational materials
to teachers and students through the State Energy Program
with assistance from the US Department of Energy.



EVERYTHING UNDER THE SUN

**Use Reply Cards to Order
Online, Snail Mail or Fax**



**NORTH DAKOTA STATE ENERGY PROGRAM
ENERGY EDUCATION RESOURCES
REPLY CARD**

Name _____

School _____

Street Address (Street Address Only - UPS Does Not Deliver to PO Box Numbers) _____

Grade _____

Class Size _____

City, State, Zip _____

Please order only appropriate kits for grade level.

**ENERGY SOURCE ENERGY EFFICIENCY
EDUCATION PROGRAMS**

Kits	Grade Level	Request Date	Alternate Date
" Offalot	K		
" Energy Elves	1-2		
" Energy Explorers	3-4		
" People Power	5-6		

KIT REFILLS

Name of Kit _____	Quantity _____
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ENERGY SOURCE ENERGY EFFICIENCY EDUCATION PROGRAMS

" The Sun's Joules	Quantity _____
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COLORING BOOKS & POSTERS

" Energy Ant Coloring Book (1 per student)	Quantity _____
" Energy Eye Chart (1 per teacher)	Quantity _____
" School Energy Management Poster (1 per teacher)	Quantity _____
" Renewable Energy Poster (1 per teacher)	Quantity _____



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3. Element One		
4. Energy Supply		
5. Small is Beautiful		
6. Energy Efficiency		
7. The Solar Frontier		
8. The Solar Promise		
9. Geothermal Energy		
10. Race for the Future		
11. The Power of Wind		
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14. Residential Wind Power		
15. Kilowatts from Cowpies		
16. Wind: Energy for the 90s		
17. Residential Solar Electricity		
18. The Man Who Loved Machines		
19. The Attached Solar Greenhouse		
20. Recycling: It's Everybody's Job		
21. How to Build a Straw Bale House		
22. Opening Your Home to Solar Energy		
23. Simple Ways to Save Energy at Home		
24. Simple Ways to Save Energy at School		
25. Wind Energy of Spirit Lake Elementary		



**NORTH DAKOTA STATE ENERGY PROGRAM
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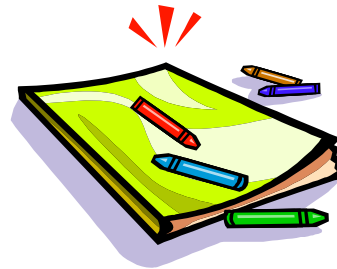
Publications	Quantity
1. House of Straw	
2. Sunspace Basics	
3. The Earth's Energy	
4. Solar Water Heating	
5. Insulation Fact Sheet	
6. Solar Heating and You	
7. Tips for Energy Savers	
8. Earth Sheltered Houses	
9. Energy Efficient Lighting	
10. Energy Efficient Windows	
11. Geothermal Heat Pumps	
12. Cooling Your Home Naturally	
13. Solar Collectors You Can Build	
14. Hot Water Energy Conservation	
15. Is Your Home an Energy Waster?	
16. Residential Solar Heating Collectors	
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Free Poster — Eye Chart — Coloring Book

Energy Ant Coloring Books

For Grades K-3, Energy Ant Coloring Book includes drawings to color and puzzles to solve energy problems.



Energy Eye Chart

A short, but to the point energy conservation message presented in the standard eye chart format.



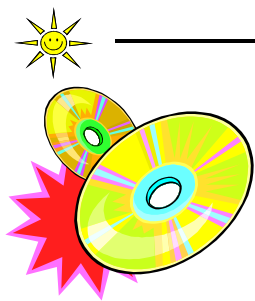
Energy Management In & Around Your School Poster

This poster illustrates many of the ways energy and resources are used and can be managed in and around a school building.

Renewable Energy Poster

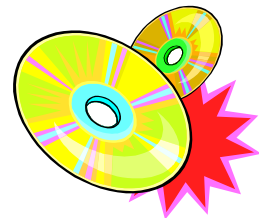
Four color poster shows several renewable energy resources including biomass, geothermal, solar and wind.





FREE

ENERGY EFFICIENCY & RENEWABLE ENERGY SOFTWARE

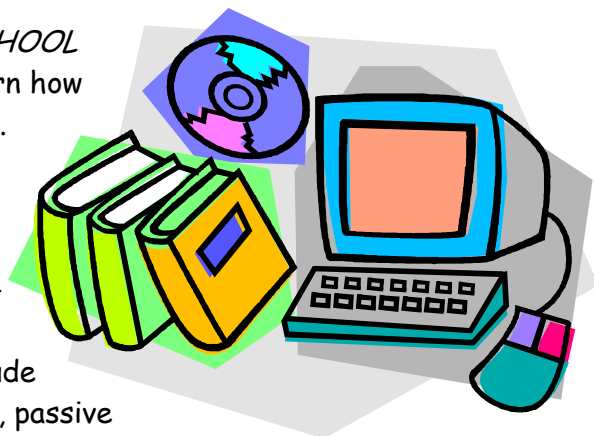


The North Dakota State Energy Program has the latest CD-ROM energy efficiency and renewable energy software release. Mail Reply Card to order.

THE SUN'S JOULES is a comprehensive educational CD-ROM on renewable energy for high school students. It contains around 1,000 screens of text and graphics, dozens of digital videos, interactive exercises, energy glossary, a list of renewable energy internet resources and a detailed index.

This release of *THE SUN'S JOULES* includes the *SCHOOL ENERGY DOCTOR* software which helps students learn how to conduct an energy and water audit of their schools.

Designed for high-school students, but a powerful learning tool for young people and adults, *THE SUN'S JOULES* is an interactive resource that teaches real-world applications of environmentally friendly energy technologies, and their positive impact. Subjects include biomass, small hydropower, geothermal, solar thermal, passive solar building design, energy efficiency, photovoltaics, wind, economics, transportation and the environment. Also included is a state-by-state energy use profile, and ability to perform full-text keyword searches.



An on-line version is available at <http://solstice.crest.org/renewables/SJ/>. The internet version does not include digital videos, interactive exercises or information updates that have occurred since version 1.0 was released.

The current version of *THE SUN'S JOULES* is 1.5, released in February, 1997. It works with personal computers in either Microsoft Windows or Apple Macintosh operating systems. Computer requirements to operate are an Intel 80406/Pentium processor, or Motorola 68040/PowerPC processor, 5 megabytes of free RAM and graphics card set to display 256 colors.

THE SUN'S JOULES is © 1995, 1996, 1997, by the Center for Renewable Energy and Sustainable Technology and the Solar Energy Research and Education Foundation.



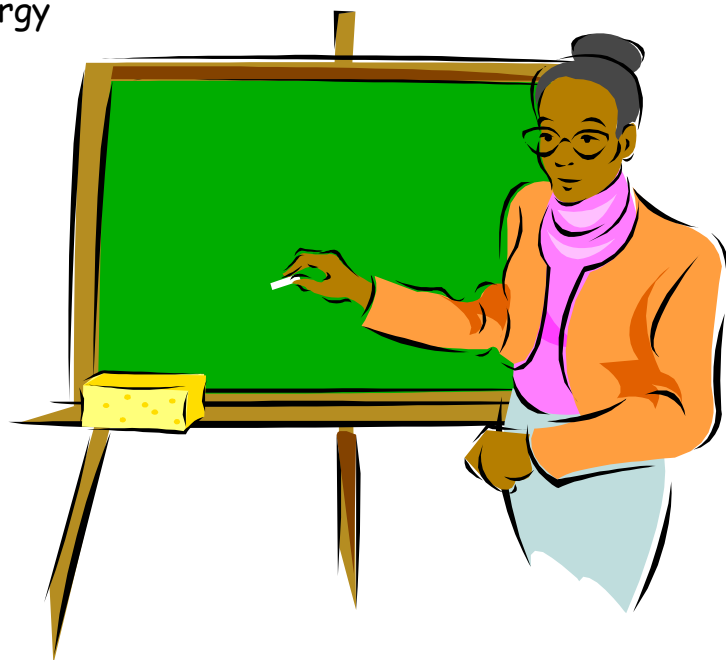
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ENERGY EDUCATION RESOURCES FOR NORTH DAKOTA TEACHERS

Energy education resources are provided by the North Dakota State Energy Program with funding from the U.S. Department of Energy.

Energy efficiency and renewable energy education resources include:

- < Audio - Visual Resources
- < Poster Sets
- < Energy Ant Coloring Books
- < Renewable Energy Information
- < Energy Efficiency Publications
- < Energy Source Curriculum Kits

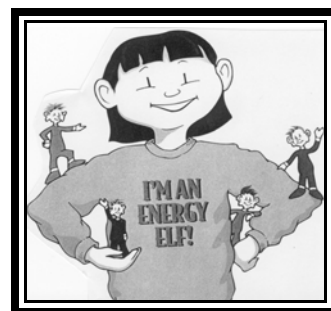


For more information, or a specific request, please call or write:

North Dakota Department of Commerce
Division of Community Services
State Energy Program
400 East Broadway Avenue, Suite 50
PO Box 2057
Bismarck, ND 58502-2057
328-5300 Phone — 328-5320 Fax
www.state.nd.us/dcs

FREE REFILLS

OFFALOT ENERGY ELVES ENERGY EXPLORERS PEOPLE POWER



If you received an Offalot, Energy Elves, Energy Explorers or People Power teacher kit from us last year, you may request the necessary replacement student learning aids that you require, at no cost. Just let us know what you need on the reply card, and we will send it to you.